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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q63408

Katsunori TANAKA, et al.

Appln. No.: 09/839,209

Group Art Unit: 2834

Confirmation No.: 3746

Examiner: Tran N. NGUYEN

Filed: April 23, 2001

For: AC GENERATOR

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AMENDMENT UNDER 37 C.F.R. § 1.111

Commissioner for Patents  
Washington, D.C. 20231

Sir:

In response to the Office Action dated May 28, 2002, please amend the above-identified application as follows:

**IN THE CLAIMS:**

**The claims are amended as follows:**

1. (Amended) An ac generator comprising a stator and a rotor:  
said stator being disposed within a bracket having an exhaust window and generating a three-phase ac current by a rotating field of said rotor; and  
said rotor comprising a rotor coil for generating a magnetic flux, a pole core composed of first and second pole core members disposed so as to cover said rotor coil and having pawl-shaped magnetic poles projecting in staggered relationship, a plurality of permanent magnets

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disposed on both side surfaces of said pawl-shaped magnetic poles for reducing the leakage of the magnetic flux between the side surfaces of the adjacent pawl-shaped magnetic poles, and a fan mounted to each of opposite axial ends of the rotor for cooling a heat-generating member heated due to a generator output current;

said permanent magnets being permanent magnets of samarium-iron alloy containing titanium (Ti) and boron (B).

4. (Amended) The ac generator as claimed in claim 1, wherein said permanent magnets are supported by corrosion-resistive holding members surrounding said permanent magnets.

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5. (Amended) The ac generator as claimed in claim 1, wherein at least one portion of a side opposing to the pawl-shaped magnetic pole side surfaces of said permanent magnets is resin-coated.

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8. (Amended) The ac generator as claimed in claim 7, wherein said restricting means is only disposed in the vicinity of the tips of the magnetic poles of said first and second pole core members to restrict the displacement of said pole tips.

**Claim 10 is added as a new claim.**

10. (New) An ac generator comprising a stator and a rotor:

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said stator being disposed within a bracket having an exhaust window and generating a three-phase ac current by a rotating field of said rotor; and

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said rotor comprising a rotor coil for generating a magnetic flux, a pole core composed of first and second pole core members disposed so as to cover said rotor coil and having pawl-shaped magnetic poles projecting in staggered relationship, a plurality of permanent magnets disposed on and connected to both side surfaces of said pawl-shaped magnetic poles for reducing the leakage of the magnetic flux between the side surfaces of the adjacent pawl-shaped magnetic poles, and a fan mounted to each of opposite axial ends of the rotor for cooling a heat-generating member heated due to a generator output current;

said permanent magnets being permanent magnets of samarium-iron alloy containing titanium (Ti) and boron (B).

**REMARKS**

Claims 1-10 are all the claims pending in the application, new claim 10 having been added, as indicated herein. Claims 1-8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1 and 6-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukai et al. (U.S. Patent No. 5,903,083), hereinafter referred to as Mukai, in view of Umeda et al. (U.S. Patent No. 6,291,918), hereinafter referred to as Umeda, and Iwata (U.S. Patent No. 5,800,728). Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukai, Umeda, and Iwata, as applied in the rejection against the base claim, and further in view of Nagayama et al. (U.S. Patent No. 5,779,453), hereinafter referred to as Nagayama. Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukai, Umeda, and Iwata, as applied in the rejection against the base claim, and further in view of Harris et al. (U.S. Patent No. 5,793,143), hereinafter referred to as Harris. Finally, claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukai, Umeda, and Iwata, as applied against the base claim, and further in view of Kuriyama (U.S. Patent No. 5,424,591).

**§ 112, second paragraph, Rejections - Claims 1-8**

The Examiner rejects claims 1-8 under § 112 for the reasons set forth on page 2 of the Office Action.

Applicant amends claims 1 and 4, as indicated herein, and submits that these amendments obviate the § 112, second paragraph, rejections of claims 1 and 4. Applicant submits that claims 2, 3, and 5-8 are patentable under 35 U.S.C. § 112, second paragraph, at least based on the amendments to claims 1 and 4.

§ 103 Rejections (Mukai, Umeda, and Iwata) - Claims 1 and 6-8

The Examiner rejects claims 1 and 6-8 for the reasons set forth on pages 2-3 of the Office Action. Applicant traverses these rejections at least for the following reasons.

With respect to independent claim 1, Applicant submits that none of the applied references, either alone or in combination, teaches or suggests "a fan mounted to each of opposite axial ends of the rotor for cooling a heat-generating member heated due to a generator output current," as recited in claim 1. Neither Mukai, Umeda, nor Iwata discloses a fan in their respective disclosures or figures. Moreover, the Examiner never even mentions the above-quoted limitation in the Office Action. Therefore, for at least these reasons, Applicant submits that claim 1 is patentable over the applied references.

Applicant submits that dependent claims 6-8 are patentable at least by virtue of their dependency from claim 1.

Further, with respect to claim 8, Applicant amends this claim, as indicated herein, and submits that none of the applied references teaches or suggests at least "wherein said restricting means is only disposed in the vicinity of the tips of the magnetic poles of said first and second pole core members to restrict the displacement of said pole tips," as recited in amended claim 8. That is, Mukai, for example, shows restricting means covering entire surfaces of its pole core members. Claim 8, however, describes that the restricting means is only to be disposed in the vicinity of the tips of the magnetic poles of the first and second pole core members. Therefore, for at least this reason, Applicant submits that claim 8 is patentable over the applied references.

§ 103 Rejections (Mukai, Umeda, Iwata, and Nagayama) - Claims 2 and 3

The Examiner rejects claims 2 and 3 under 35 U.S.C. § 103 for the reasons set forth on page 4 of the Office Action. In response, Applicant submits that claims 2 and 3 are patentable at least by virtue of their dependency from claim 1. Nagayama does not make up for the deficiencies of the other applied references.

§ 103 Rejection (Mukai, Umeda, Iwata, and Harris) - Claim 4

The Examiner rejects claim 4 under 35 U.S.C. § 103 for the reasons set forth on page 5 of the Office Action. In particular, the Examiner alleges that Mukai, Umeda, and Iwata substantially disclose the claimed invention, and that Harris makes up for any deficiencies of the other references. The Examiner further alleges that it would have been obvious to one skilled in the art at the time the invention was made to modify the rotor by embodying the permanent magnets with corrosion-resistive holding members, as doing so would allegedly provide means for securely holding the permanent magnets in place and protecting the permanent magnets from corrosion.

First, Applicant submits that claim 4 is patentable at least by virtue of its dependency from claim 1. Harris does not make up for the deficiencies of the other references.

Further, Applicant submits that there would have been no motivation, teaching, or suggestion to combine Harris with Mukai, Umeda, and Iwata, either in the references themselves or the knowledge in the art. That is, Harris discloses that pockets 36 of a fan 24 contain the permanent magnets 38, and that when the fan 24 is assembled with rotor 10, a pocket 36

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containing magnet 38 is pressed under a pole finger 22 of second pole piece 14 and above body 32 of first pole piece 12. *See col. 2, lines 40-52.* On the other hand, Mukai, for example, discloses that the magnets 38 are disposed on the rotor (not in pockets of a fan) and between the various claw poles (not under and above claw poles). Therefore, at least for these reasons, Applicant submits that one skilled in the art would not have combined Harris with the other applied references, to satisfy the limitations of Applicant's invention.

§ 103 Rejection (Mukai, Umeda, Iwata, and Kuriyama) - Claim 5

The Examiner rejects claim 5 for the reasons set forth on page 5 of the Office Action. In response, Applicant submits that claim 5 is patentable at least by virtue of its dependency from claim 1.<sup>1</sup> Kuriyama does not make up for the deficiencies of the other references.

With respect to claim 9, Applicant notes that the Examiner did not address this claim in the body of Office Action. Accordingly, Applicant respectfully requests that the Examiner indicate that claim 9 is allowable or issue a new non-final office action indicating the basis for rejecting claim 9.

Finally, Applicant adds new claim 10, as indicated herein, and submits that the prior art does not teach or suggest at least "a plurality of permanent magnets disposed on and connected to both side surfaces of said pawl-shaped magnetic poles for reducing the leakage of the magnetic flux between the side surfaces of the adjacent pawl-shaped magnetic poles."

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<sup>1</sup> Claim 5 is amended, as indicated herein, for clarification purposes only.

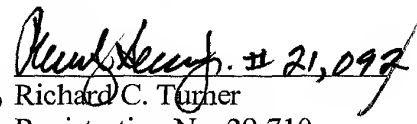
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In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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